DOCUMENT RESUME

ED 061 310 TM 001 510

TITLE	Employment Clerk 205.368 -- Technical Report on Standardization of the General Aptitude Test Battery.
INSTITUTION	Manpower Administration (DOL), Washington, D.C. U.S. Training and Employment Service.
REPORT NO	TR-S-105
PUB DATE	Jun 57
NOTE	8p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Aptitude Tests; Clerical Occupations; *Clerical Workers; *Cutting Scores; Employment Services; Evaluation Criteria; Job Applicants; *Job Skills; Norms; Occupational Guidance; *Personnel Evaluation; Test Reliability; Test Validity
IDENTIFIERS	Employment Clerk; GATB; *General Aptitude Test Battery

ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is included. (AG)

ED 061310

FINAL REPORT

TECHNICAL REPORT

ON

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

EMPLOYMENT CLERK 205.368

S-105

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

TM 001 510

U. S. Employment Service in
Cooperation with
New York State Employment Service

U. S. DEPARTMENT OF LABOR

Washington , D.C.
June 1957

GATB #2132
October 1956

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY FOR EMPLOYMENT CLERK 205.368

S-105

Summary

The General Aptitude Test Battery, B-1002B, was administered to a sample of 44 women and 13 men employed as Employment Clerks 205.368 in four Manhattan Placement Offices of the New York State Employment Service. The criterion consisted of combined supervisory ratings on a four-item descriptive rating scale. On the basis of mean scores, standard deviations, correlations with the criterion, job analysis data, and their combined selective efficiency, Aptitudes G-Intelligence, V-Verbal Aptitude, N-Numerical Aptitude and Q-Clerical Perception were selected for inclusion in the test norms.

GATB Norms for Employment Clerk 205.368

Table I shows, for B-1001 and B-1002, the minimum acceptable score for each aptitude included in the test norms for Employment Clerk 205.368.

TABLE I

Minimum Acceptable Scores on B-1001 and B-1002 for S-105

B-1001			B-1002		
Aptitude	Tests	Minimum Acceptable Aptitude Score	Aptitude	Tests	Minimum Acceptable Aptitude Score
G	CB-1-H CB-1-I CB-1-J	90	G	Part 3 Part 4 Part 6	85
V	CB-1-J	100	V	Part 4	100
N	CB-1-D CB-1-I	95	N	Part 2 Part 6	90
Q	CB-1-B	95	Q	Part 1	95

Effectiveness of Norms

The data in Table IV indicate that 12 of the 22 poor workers, or 55 percent of them, did not achieve the minimum scores established as cutting scores on the recommended test norms. This shows that 55 percent of the poor workers would not have been hired if the recommended test norms had been used in the selection process. Moreover, 34 of the 44 workers who made qualifying test scores, or 77 percent, were good workers.

TECHNICAL REPORT

I. Problem

This study was conducted to determine the best combination of aptitudes and minimum scores to be used as norms on the General Aptitude Test Battery for the occupation of Employment Clerk 205.368.

II. Sample

The General Aptitude Test Battery, B-1002B, was administered during September and October 1956 to 44 women and 13 men employed as Employment Clerks 205.368. in four Manhattan Placement Offices of the New York State Employment Service. These offices, organized on an industrial basis, are Commercial and Sales, Service Industries, Industrial, and Needle Trades. The 57 clerks in the tested sample included almost all of the experienced clerks that could be made available for testing. A few clerks were not included in the sample because they were too new on the job to be rated.

Table II shows the means, standard deviations, ranges, and Pearson product-moment correlations with the criterion for age, education and experience.

TABLE II

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education and Experience

N = 57

	M	σ	Range	r
Age (years)	41.2	13.4	18-68	.025
Education (years)	12.4	2.2	8-20	.039
Experience (months)	77.9	80.5	7-432	.051

The correlations between the criterion and age, education and experience are not significant and are close to zero. This sample has a higher average age and is more heterogeneous with respect to age and experience than other occupational groups. However, the distributions of age and experience for this sample are probably fairly typical of those of Employment Clerks in other employment offices.

III. Job Description

Job Title: Employment Clerk 205.368

Job Summary: Conducts reception interviews of applicants in order to route them to correct departments, and maintains employment office records. Answers inquiries and supplies general information to applicants. Pulls and files application cards as needed. Posts daily and periodic production records; posts job orders, placements and cancellations of job orders; keeps individual and unit records on all phases of placement activity. Compiles and prepares statistical data for studies and reports, making the necessary arithmetic computations. Participates in file inventories and clearing of files. Sorts and distributes mail and answers telephones. May perform other related duties as needed.

IV. Experimental Battery

All of the tests of the GATB, B-1002B, were administered to the sample group.

V. Criterion

The criterion used consisted of the total ratings made by the immediate and next higher supervisor of each individual on a descriptive rating scale. The four items on the scale were as follows: Quality of Work, Quantity of Work, Reliability and Resourcefulness. For each trait five degrees of performance were presented in the form of brief statements, so that each trait had a possible range of values from 1 to 5. With two raters for each worker, a minimum of 8 and a maximum of 40 points were the limits of the total possible criterion score. The mean criterion score for the experimental sample was 26.3, the standard deviation was 7.3, and the range was 8 to 39. The coefficient of reliability between the two sets of ratings was .827. The reliability of the total scores, as estimated by the Spearman-Brown prophecy formula was .905.

VI. Statistical and Qualitative Analysis

Table III shows the means, standard deviations, and Pearson product-moment correlations with the criterion for the aptitudes of the GATB. The means and standard deviations of the aptitudes are comparable to general working population norms with a mean of 100 and a standard deviation of 20.

TABLE III

Means (M), Standard Deviations (σ), and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB

N = 57

Aptitudes	M	σ	r
G-Intelligence	103.7	14.0	.520**
V-Verbal Aptitude	112.9	15.8	.514**
N-Numerical Aptitude	107.0	11.7	.458**
S-Spatial Aptitude	89.9	16.2	.267*
P-Form Perception	92.4	16.0	.389**
Q-Clerical Perception	115.8	16.6	.383**
K-Motor Coordination	109.6	18.3	.298*
F-Finger Dexterity	89.7	20.1	.261
M-Manual Dexterity	95.0	24.3	.255

** Significant at the .01 level
* Significant at the .05 level

The statistical results were interpreted in the light of the job analysis data. The job analysis indicated that the following aptitudes measured by the GATB appear to be important for this occupation:

Intelligence (G) - required in making quick and accurate judgments in routing applicants and answering inquiries, and in interpreting and summarizing data from office records.

Verbal Aptitude (V) - required in interviewing and routing applicants, receiving inquiries from applicants and giving general information.

Numerical Aptitude (N) - required in posting daily and periodic production records; posting orders, placements, and cancellations; compiling and preparing statistical data for studies and reports; making and checking arithmetical computations; keeping financial records and accounts.

Clerical Perception (Q) - required in handling application cards; filing; posting a variety of records; making file inventories; addressing mail; posting orders, placements, and cancellations; checking forms for accuracy; sorting and distributing mail; maintaining correspondence files.

The highest mean scores in descending order of magnitude were obtained for Aptitudes Q, V, K, N and G, respectively. All of the aptitudes, except Aptitudes F and M, have standard deviations of less than 20. Aptitude N has the lowest standard deviation.

For a sample of 57 cases, correlations of .340 and .262 are significant at the .01 level and the .05 level of confidence, respectively. Aptitudes G, V, N, P and Q correlate significantly with the criterion at the .01 level. Aptitudes S and K correlate significantly with the criterion at the .05 level.

Aptitudes G, V, N and Q were considered further for inclusion in the test norms on the basis of the quantitative and qualitative factors cited above. These aptitudes appeared to be important in terms of the job analysis data, had relatively high mean scores and had correlations significant at the .01 level with the criterion. Tetrachoric correlations with the criterion were computed for several sets of trial norms consisting of various combinations of Aptitudes G, V, N, and Q and appropriate cutting scores. A comparison of the results showed that norms which included Aptitudes V and Q had the best selective efficiency for this sample. The selective efficiency of norms consisting of V-100 and Q-95 was neither increased nor decreased by the addition of Aptitudes G and N with cutting scores of 85 and 90, respectively. Since Aptitudes G and N are important in terms of the job analysis data, showed significant correlations with the criterion at the .01 level, had moderately high mean scores, and had the smallest standard deviations for this sample, it was decided to include them in the test norms. Therefore, the final test norms include Aptitudes G, V, N and Q.

The cutting score for Aptitude V was set at one standard deviation below its mean score for this experimental sample and rounded to the higher adjacent five-point score level. For Aptitudes G and Q the cutting scores were set at one standard deviation below the mean and rounded to the lower adjacent five-point score level. The cutting score for Aptitude N was set at one standard deviation below the mean rounded to the nearest five-point score level and adjusted to the next lower five-point score level. Setting cutting scores at these levels yielded the best selective efficiency for the norms and resulted in cutting scores of 85, 100, 90 and 95 for Aptitudes G, V, N and Q, respectively.

Although there is some statistical evidence to warrant consideration of Aptitudes P and K for inclusion in the test norms, these aptitudes did not appear to be sufficiently important on the basis of job analysis data to warrant further consideration. Therefore, these aptitudes were not included in the final test norms.

VII. Concurrent Validity of Norms

For the purpose of computing the tetrachoric correlation coefficient between the test norms and the criterion and applying the Chi Square test, the criterion was dichotomized. A criterion critical score of 24 was used to form the dichotomy between good and poor workers, since at this point a comparatively large break in the distribution of criterion scores occurred. This resulted in 22 of the 57 workers, or 39 percent of the sample, being placed in the low criterion group.

Table IV shows the relationship between test norms consisting of Aptitudes G, V, N and Q with critical scores of 85, 100, 90 and 95, respectively, and the dichotomized criterion for Employment Clerk 1-18.31. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV-E

Relationship between Test Norms Consisting of Aptitudes G, V, N and Q with Critical Scores of 85, 100, 90 and 95, Respectively, and the Criterion for Employment Clerk 205.368

N = 57

	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	1	34	35
Poor Workers	12	10	22
Total	13	44	57

$r_{tet} = .91$ $\qquad$ $X^2 = 17.669$

$\sigma_{r_{tet}} = .23$ $\qquad$ $P/2 < .0005$

The data in the above table indicate a high and significant relationship between the test norms and the criterion for this sample.

VIII. Conclusions

On the basis of mean scores, correlations with the criterion, job analysis data and their combined selective efficiency, Aptitudes G, V, N and Q with minimum scores of 85, 100, 90 and 95, respectively, are recommended as B-1002 norms for the occupation of Employment Clerk 205.368 The equivalent B-1001 norms consist of G-90, V-100, N-95 and Q-95.

IX. Determination of Occupational Aptitude Pattern

When the specific test norms for an occupation include four aptitudes, only those occupational aptitude patterns which include three of those four aptitudes with cutting scores that are within 10 points of the cutting scores established for the specific norms are considered for that occupation. The only one of the existing 22 occupational aptitude patterns which meets these criteria for this study is OAP-6, which consists of G-95, N-90 and Q-95 for B-1002. The selective efficiency of OAP-6 for this sample was determined by means of the tetrachoric correlation technique. A tetrachoric correlation of .50 with a standard error of .22 was obtained, which indicates a significant relationship between OAP-6 and the criterion for this experimental sample. The proportion of the sample screened out by OAP-6 was .28 which is within the required range of .10 to .60. Therefore, it is recommended that OAP-6 be used in counseling for the occupation of Employment Clerk 205.368.